

AMENDMENTS TO THE CLAIMS:

Please amend claims 63, 71, 80, 81, 86, 92, 94, and 103 as follows. This listing of claims will replace all prior versions and listings of claims in the above-referenced application.

Listing of Claims:

63. (Currently Amended) A method of sending data, comprising:

obtaining a first predetermined value for a sequence number;

obtaining blocks of data, wherein each of the blocks of data corresponds to a packet of data;

assigning the first predetermined value as the sequence number to each of the packets of data, wherein at least two packets of data are assigned the same sequence number; and

in response to the sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledging receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to a destination, wherein packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained.

64. (Previously Presented) The method of Claim 63, the method further comprising:

prior to acknowledging, indicating to a first storage device a transfer ready signal; and

sending said blocks of data to a second storage device.

65. (Previously Presented) The method of Claim 64, wherein said acknowledging is performed prior to providing said blocks of data to said second storage device.

66. (Previously Presented) The method of Claim 63, wherein the second predetermined value is a number that is one greater than the first predetermined value.

67. (Previously Presented) The method of Claim 63, further comprising:

in response to the sequence number becoming equal to the second predetermined value, providing a value to each of the packets corresponding to a total number of packets of data that are assigned the first predetermined value as the sequence number.

68. (Previously Presented) The method of Claim 63, further comprising:

incrementing the sequence number periodically.

69. (Previously Presented) The method of Claim 68, wherein incrementing the sequence number periodically includes incrementing the sequence number according to an amount of time between a first block of data being provided and a second block of data being provided, wherein the second block of data being provided depends upon the first block of data being provided.

70. (Previously Presented) The method of Claim 63, further comprising:

prior to sending the packets of data, storing the data in a journal.

71. (Currently Amended) A method of receiving data, comprising:

accumulating received packets of data having a sequence number equal to a first predetermined value, wherein at least two packets of data have the same sequence number;
obtaining a first indication that the sequence number equals the first predetermined value;
obtaining a second indication that the sequence number equals a second predetermined value different from the first predetermined value; and
in response to obtaining the second indication, transferring data corresponding to packets of data having the sequence number equal to the first predetermined value to a receiving device, wherein packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated.

72. (Previously Presented) The method of Claim 71, further comprising:

following obtaining the first indication, initiating a transfer command to the receiving device.

73. (Previously Presented) The method of Claim 72, wherein data is not transferred to the receiving device until the receiving device acknowledges initiation of data transfer in response to the transfer command being initiated.

74. (Previously Presented) The method of Claim 73, further comprising:

acknowledging completion of sending said data to said receiving device prior to all said data actually being transferred to said receiving device.

75. (Previously Presented) The method of Claim 74, wherein acknowledging is performed in response to a sending storage device receiving the transfer command.

76. (Previously Presented) The method of Claim 71, wherein the second predetermined value is a number that is one greater than the first predetermined value.

77. (Previously Presented) The method of Claim 71, further comprising:

incrementing the sequence number periodically.

78. (Previously Presented) The method of Claim 77, wherein incrementing the sequence number periodically includes incrementing the sequence number according to an amount of time between a first packet of data being provided and a second packet of data being provided, wherein the second packet of data being provided depends upon the first packet of data being provided.

79. (Previously Presented) The method of Claim 71, further comprising:

prior to transferring the data, storing the data in a journal.

80. (Currently Amended) A method of transferring data, comprising:

obtaining a first predetermined value for a first sequence number;

obtaining blocks of data, wherein each of the blocks of data corresponds to a packet of data;

assigning the first predetermined value as the first sequence number to each of the packets of data, wherein at least two packets of data are assigned the same sequence number;

in response to the first sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledging receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to a destination, wherein packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained;

accumulating received packets of data having a sequence number equal to said first predetermined value;

obtaining a first indication that the sequence number equals the first predetermined value;

obtaining a second indication that the sequence number equals a second predetermined value different from the first predetermined value; and

in response to obtaining the second indication, transferring data corresponding to packets of data having the sequence number equal to the first predetermined value to a receiving device, wherein packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated.

81. (Currently Amended) A computer system comprising:

a host performing a data operation for transferring blocks of data from a first device to a second device;

a first WAN blade connected to said first device;

a second WAN blade connected to said first WAN blade by a network, said second device being connected to said second WAN blade;

wherein said first WAN blade includes machine executable code that receives said blocks of data from said first storage device, each of said blocks corresponding to a packet of data, assigns a first predetermined value to each of said packets of data, wherein at least two packets of data are assigned the same sequence number, and, in response to receiving a second predetermined value different than said first predetermined value, acknowledges receipt of said blocks of data associated with said first predetermined value and sending the packets of data that are assigned the first predetermined value as a sequence number to said second device, wherein packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are received; and

said second WAN blade includes machine executable code that receives said packets of data associated with said first predetermined value, obtains an indication of said first predetermined value as a sequence number, obtains a second indication that the sequence number equals a second predetermined value different from the first predetermined value, and in response to obtaining the second indication, transfers data corresponding to packets of data having the sequence number equal to the first predetermined value to said second device, wherein packets of data associated with the same sequence number are transferred to the second device in an order that is independent of an order in which the packets are received.

82. (Previously Presented) The computer system of Claim 81, wherein said first WAN blade is one of a first set of WAN blades, said second WAN blade is one of second set of WAN blades, said first device is included in a first consistency group of a plurality of storage devices, and said second device is included in a second consistency group of a plurality of storage devices.

83. (Previously Presented) The computer system of Claim 82, wherein said first device is a primary storage device of the first consistency group, and said host computer is a first host computer coupled to said first device.

84. (Previously Presented) The computer system of Claim 83, wherein said second device is a primary storage device of said second consistency group, and the computer system further includes a second host computer coupled to said second device.

85. (Previously Presented) The computer system of Claim 84, wherein other devices included in said first and second consistency groups are secondary storage devices.

86. (Currently Amended) A computer program product, implemented in a computer-readable medium, for sending data, comprising:

machine executable code that obtains a first predetermined value for a sequence number;

machine executable code that obtains blocks of data, wherein each of the blocks of data corresponds to a packet of data;

machine executable code that assigns the first predetermined value as the sequence number to each of the packets of data, wherein at least two packets of data are assigned the same sequence number; and

machine executable code that, in response to the sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledges receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to a destination, wherein packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained.

87. (Previously Presented) The computer program product of Claim 86, further comprising:

machine executable code that, prior to said acknowledging, indicates to a first storage device a transfer ready signal; and

machine executable code that sends said blocks of data to a second storage device.

88. (Previously Presented) The computer program product of Claim 87, wherein said machine executable code that acknowledges is executed prior to providing said blocks of data to said second storage device.

89. (Previously Presented) The computer program product of Claim 86, wherein the second predetermined value is a number that is one greater than the first predetermined value.

90. (Previously Presented) The computer program product of Claim 86, further comprising:
machine executable code that, in response to the sequence number becoming equal to the second predetermined value, provides a value to each of the packets corresponding to a total number of packets of data that are assigned the first predetermined value as the sequence number.

91. (Previously Presented) The computer program product of Claim 86, further comprising:
machine executable code that increments the sequence number periodically.

92. (Previously Presented) The computer program product of Claim 91, wherein said machine executable code that increments the sequence number periodically includes machine executable code that increments the sequence number according to an amount of time between a first block of data being provided and a second block of data being provided, wherein the second block of data being provided depends upon the first block of data being provided.

93. (Previously Presented) The computer program product of Claim 86, further comprising:

machine executable code that, prior to sending the packets of data, stores the data in a journal.

94. (Currently Amended) A computer program product, implemented in a computer-readable medium, for receiving data, comprising:

machine executable code that accumulates received packets of data having a sequence number equal to a first predetermined value, wherein at least two packets of data have the same sequence number;

machine executable code that obtains a first indication that the sequence number equals the first predetermined value;

machine executable code that obtains a second indication that the sequence number equals a second predetermined value different from the first predetermined value; and

machine executable code that, in response to obtaining the second indication, transfers data corresponding to packets of data having the sequence number equal to the first predetermined value to a receiving device, wherein packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated.

95. (Previously Presented) The computer program product of Claim 94, further comprising:

machine executable code that, following obtaining the first indication, initiates a transfer command to the receiving device.

96. (Previously Presented) The computer program product of Claim 95, wherein data is not transferred to the receiving device until the receiving device acknowledges initiation of data transfer in response to the transfer command being initiated.

97. (Previously Presented) The computer program product of Claim 96, further comprising:
machine executable code that acknowledges completion of sending said data to said receiving device prior to all said data actually being transferred to said receiving device.

98. (Previously Presented) The computer program product of Claim 97, wherein said machine executable code that acknowledges is executed in response to a sending storage device receiving the transfer command.

99. (Previously Presented) The computer program product of Claim 94, wherein the second predetermined value is a number that is one greater than the first predetermined value.

100. (Previously Presented) The computer program product of Claim 94, further comprising:
machine executable code that increments the sequence number periodically.

101. (Previously Presented) The computer program product of Claim 100, wherein said machine executable code that increments the sequence number periodically includes machine executable code that increments the sequence number according to an amount of time between a first packet of data being provided and a second packet of data being provided, wherein the second packet of data being provided depends upon the first packet of data being provided.

102. (Previously Presented) The computer program product of Claim 94, further comprising:
machine executable code that, prior to transferring the data, stores the data in a journal.

103. (Previously Presented) A computer program product, implemented in a computer-readable medium, for transferring data, comprising:

 machine executable code that obtains a first predetermined value for a first sequence number;

 machine executable code that obtains blocks of data, wherein each of the blocks of data corresponds to a packet of data;

 machine executable code that assigns the first predetermined value as the first sequence number to each of the packets of data, wherein at least two packets of data are assigned the same sequence number;

 machine executable code that, in response to the first sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledges receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to a destination, wherein packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained;

 machine executable code that accumulates received packets of data having a sequence number equal to the first predetermined value;

 machine executable code that obtains a first indication that the sequence number equals

the first predetermined value;

machine executable code that obtains a second indication that the sequence number equals a second predetermined value different from the first predetermined value; and

machine executable code that, in response to obtaining the second indication, transfers data corresponding to packets of data having the sequence number equal to the first predetermined value to a receiving device, wherein packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated.

104. – 108. (Cancelled)